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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,186	07/25/2006	Kazuhiro Sugie	043888-0490	8019
53080 7590 10/05/2009 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, NW WASHINGTON, DC 20005-3096			EXAMINER HAN, KWANG S	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 10/05/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/587,186	Applicant(s) SUGIE ET AL.	
	Examiner Kwang Han	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

LONG LIFE AND LOW CORROSION LEAD STORAGE BATTERY

Examiner: K. Han SN: 10/587,186 Art Unit: 1795 October 6, 2009

Detailed Action

1. The Applicant's request for reconsideration filed on May 20, 2009 was received.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Specification

3. The objection to the title has been withdrawn in view of the amended title.

Claim Rejections - 35 USC § 103

4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemura (JP 2003-346888, machine translation) in view of Ohba et al. (US 5989750) is maintained. The rejection has been repeated below for convenience.

Regarding claim 1, Yonemura is directed towards a lead storage battery
[Abstract] comprised of the following:

- a plurality of negative electrode plates (Drawing 1) each with a negative electrode grid (6), having a handle part (5, tab), and a negative electrode active material [0014] retained by the grid,

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- a plurality of positive electrode plates each with a positive electrode grid, having a handle part (tab), and a positive electrode active material retained by the grid [Abstract] (Drawing 1),
- a plurality of separators (3) separating the positive electrode plate and the negative electrode plate,
- a positive electrode connecting member (10, 8) comprising a positive electrode shelf (8, positive electrode strap) to which the handle part (tabs) of each positive electrode plate of the electrode plate pack is connected (Drawing 1),
- a positive electrode connecting body (10) provided at the positive electrode shelf,
- a negative electrode connecting member (7, 9) comprising a negative electrode strap (7) to which the handle part (tab) of each negative electrode plate of the electrode plate pack is connected (Drawing 1), and
- a negative electrode connecting body (9) provided at the negative electrode strap (Drawing 1) [0010-0020], and
- the positive electrode grid, the negative electrode grid, the positive electrode connective member, and the negative electrode connecting member comprise a Pb-alloy including Ca or Sn [0012-0013],
- a negative electrode grid (6) that includes Sb [0014] but not in the handle part [0013].

Yonemura is silent towards the separator including silica.

Ohba teaches a lead-acid battery separator which includes an acid-resisting, oxidation-resisting inorganic filler such as silica (Column 3, Lines 9-30) for the benefit of forming a separator with high-rate discharge characteristics at low-temperature and endurance at a high temperature (Column 2, Lines 41-44). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a separator with silica inorganic filler because Ohba teaches it forms a separator which has high-rate discharge characteristics at low-temperature and in endurance at a high temperature.

Regarding claims 2 and 3, the teachings of Yonemura and Ohba as discussed above are herein incorporated. Ohba further teaches a separator comprising a microporous synthetic resin sheet (Column 3, Lines 9-46) with examples having 65 wt % of silica particles (Column 5, Table 1, Sample No. 1) dispersed and a fiber mat (Column 4, Lines 35-47) with examples having 30 wt % silica (Column 5, Table 1, Samples No. 3-5) dispersed. The compositional changes within the differing samples shown in tables 1 and 3 show that the composition including variations in silica content have an effect on the oxidation resistance teaching it as a result effective variable (column 5). The courts have held that optimization of a results effective variable such as the silica content is not novel. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 4, Yonemura discloses a negative electrode active material layer including 0.001 to 0.1 weight % [0006-0007]. It has been held that where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie

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case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (MPEP 2144.05)

Regarding claim 5, Yonemura discloses a negative electrode grid formed from a Pb-Ca alloy with a Pb-Sb alloy layer [0013].

Regarding claim 6, Yonemura discloses the Pb-Sb alloy layer to be formed on the surface of the negative electrode grid which is a part of the negative electrode plate would include the lower region of the negative electrode plate [0013].

Regarding claim 7, Yonemura discloses a positive electrode grid comprised of a Pb alloy with a lead alloy layer of the surface that contains Sn [0008].

Regarding claim 8, the teachings of Yonemura and Ohba as discussed above are herein incorporated. Yonemura is silent as to the shape of the separator.

Ohba teaches the separator to be formed in a more reliable shape for holding the electrode such as an envelope (bag) to provide a greater sense of security (Column 1, Lines 27-52; Claim 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a separator for a lead-acid battery with an envelope shape for the benefit of having a more reliable shape to hold the electrode and provide a greater sense of security. The courts have also held that the configuration of the claimed separator was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the separator was significant. In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Double Patenting

5. Claims 1, 2, 3, 4, and 8 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 3, 4, and 6 of copending Application No. 10/585078 (hereinafter referred to as Sugie '078) in view of Yonemura (JP 2003-346888, machine translation).

Claims 1, 2, 3, 4, and 6 of Sugie '078 recite all the limitations of the instant claims 1, 2, 3, 4, and 8 except that of the negative electrode grid further includes Sb in a part thereof excluding said tab.

Yonemura teaches a negative electrode grid (6) that includes Sb [0014] but not in the handle part [0013] because it provides a highly reliable lead-acid battery by suppressing corrosion of the tab part. It would have been obvious to one of ordinary skill in the art at the time of the invention to have a negative electrode grid with Sb but not in the handle part because Yonemura teaches it provides for a highly reliable lead-acid battery by suppressing corrosion of the tab part.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

6. Applicant's arguments filed May 20, 2009 have been fully considered but they are not persuasive.

Applicant's principal arguments are:

(a) the Ohba reference is silent with respect to the use of silica to prevent corrosion so there is no motivation to combine the silica of Ohba with the battery of Yonemura,

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(b) the Applicant's disclosure in Table 1 shows unexpected and superior results to the invention as shown in the claims and that the cited references fail to predict or suggest these unexpected results.

In response to Applicant's arguments, please consider the following comments:

(a) the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985),

(b) the Yonemura reference states that the composition controls the increase in loss of liquid, cancels the corrosion in the negative electrode and contributes to the life performance [Abstract, 0016] suggesting the unexpected results as stated by the Applicant. Yonemura also teaches the Sb content to be within the range of 0.001 to 0.1 mass % as stated in the rejection above [0014]. Regarding the disclosure as presented in Table 1 of the specifications. The data as shown in Table 1 between batteries B1-B5 show a corrosion rate of the negative electrode grid only varying between 2.1-8.6% as the Sb content is varied from 0.0002 to 0.007. It is difficult to make a direct correlation between the corrosion rate being affected by the Sb content and the silica content since the measurements do not provide any statistically and significant data that shows a correlation between the composition and the corrosion rate as shown in table 1.

Furthermore in applicants disclosure provided in Table 2 [0071] the silica content and the Sb content has been varied in the same range as provided in Table 1 showing the

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cycle life to have a minimum variation as shown by batteries G1-G5 having a cycle life range of 23900 to 21500 which is also not statistically significant. Applicant must show that results were greater than those which would have been expected from the prior art to an unobvious extent, and that the results are of a significant, practical advantage. Ex parte The Nutrasweet Co., 19 USPQ2d 1586 (Bd. Pat. App. & Inter. 1991) MPEP

716.02

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Han whose telephone number is (571) 270-

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5264. The examiner can normally be reached on Monday through Friday 8:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. H./
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795